Amendments to the Specification

All references are to the specification as published at US 2005/0225222 (the "Published Application"). In the following amendments to the specification, deleted matter is indicated by strike-out text or double bracketed text and added matter is indicated by underlined text.

Please amend paragraph [0005] of the Published Application as follows:

-- In accordance with the invention, an illumination device comprises a highly thermally conductive substrate having a surface, a plurality of light emitting diodes (LEDs) supported by the surface and arranged in an array to provide illumination. At least one reflective barrier at least partially surrounds each LED. The reflective barrier is shaped to reflect away from the LED light emitted by other LEDs in the array. Advantageously the ~~substrate~~ LEDs and reflective barrier are thermally coupled to a heat spreader to dissipate heat. The substrate preferably comprises an LTTC-M heat spreader, and the reflective thermal barriers preferably comprise metal ridges or cups.--

Please amend paragraph [0013] of the Published Application as follows:

-- FIG. 7 shows a multi-cup tapered reflective barrier; ~~and~~ --

Please add the following paragraph after paragraph [0014] of the Published Application:

-- FIGS. 9-11 show exemplary reflecting surfaces on an LED cavity wall, according to embodiments of the present invention.--

Please amend paragraph [0018] of the Published Application as follows:

-- FIG. 4 illustrates, a tapered barrier reflector 40 fabricated as a periodic array of troughs ~~41~~ 43 and tapered reflective ridges 42. This accordion-like structure is a particularly cost effective to manufacture. Metal reflective material can be folded in an accordion-like manner to form the tapered reflective barriers 42. LED dies 12 can be affixed in the troughs 43 between reflective barriers 42.--

Please amend paragraph [0020] of the Published Application as follows::

-- FIG. 5 shows an alternative high efficiency LED array 50 comprising discrete reflective barrier structures 52. The reflective thermal barriers 52 are advantageously shaped as fins causing the heat to move from the bottom of the LED 12 through the thermally conductive material (such as solder or silver epoxy 53) to the top of the fin. The length and angle of the fin can be modified by those skilled in the art. The thermal resistance of a LED array package is inversely proportional to the heat dissipating area. Thus the more and longer reflective thermal barriers 52 are, the larger the area for heat dissipation. The LED ~~devises~~ devices are subsequently encapsulated as by an optically matched clear epoxy 55 formed in a domed shaped in order to increase light extraction and to minimize total internal reflection (TIR).--

Please amend paragraph [0023] of the Published Application as follows:

-- FIG. 3 shows further detail of possible electrical connections to die 12. The electrical connections can be made via wire bonds 32 to the LED anode and cathode. Alternatively either the anode or cathode can make electrical contact with a conductor on an insulating substrate, or a conductive substrate. In this case, the remaining terminal can then be connected to dies 12 by a single wire bond. LED die can be soldered (to a metal substrate 36 or overlying conductor 35) or they can be epoxied 33 to substrate 36. A typically translucent or transparent package wall 34 can support a translucent or transparent LED encapsulate 31.--

Please amend paragraph [0024] of the Published Application as follows:

-- Turning ~~back~~ to FIG. 6 [[5]], it can be seen that liquid epoxy 53 can be deposited on a metal conductor 56 [[52]] and conductor 56 [[52]] can be attached to substrate 54. Conductor 56 [[52]] can be thick film, thin film, electro-deposited, a metal laminate, or other suitable electrical and thermal conductor. If no electrical contact is required conductor 56 [[52]] can be omitted; however additional heat spreading from the die can be accomplished if conductor 56 [[52]] is used. Substrate 54 can be a ceramic, multilayer printed wire board, low temperature cofired ceramic (LTCC), LTCC on metal (LTCC-M), high temperature cofired ceramic (HTCC), or other suitable electrical insulator and thermal conductor. Substrate 54 can be an electrically conducting material if electrical contact to

die 12 is desirable, or it can be an electrically insulating layer formed between the substrate and die 12.

Please amend the "Abstract" section of the Published Application as follows:

-- In accordance with the invention, an illumination device comprises a highly thermally conductive substrate having a surface, a plurality of light emitting diodes (LEDs) supported by the surface and arranged in an array to provide illumination. At least one reflective barrier at least partially surrounds each LED. The reflective barrier is shaped to reflect away from the LED light emitted by other LEDs in the array. Advantageously the ~~substrate~~ LEDs and reflective barrier are thermally coupled to a heat spreader to dissipate heat. The substrate preferably comprises an LTTC-M heat spreader, and the reflective thermal barriers preferably comprise metal ridges or cups.--